Remarks

Applicant respectfully requests that the Examiner reconsider the present application in light of the above amendments and following remarks. The specification and claim 26 have been amended. Claims 27-46 have been added and no claims have been cancelled. Therefore, claims 26-46 are pending in the present application.

Claim 26 has been amended to state that the injector body and the solenoid body are adjacent, formed of solenoid-quality stabilized ferritic stainless steel, and joined together by welding. Claim 27 has been added to state that the solenoid-quality stabilized ferritic stainless steel in claim 26 includes between 0.26 and 1.5 weight percent of titanium. Claim 28 has been added to state that the solenoid-quality stabilized ferritic stainless steel in claim 26 includes between 1.1 and 1.5 weight percent of columbium.

Claims 29-31 have been added to the application and generally correspond to cancelled claims 1, 3 and 4 as presented in the Amendment and Response to Final Office Action dated May 22, 2006 ("Response to Final Office Action"). Claim 32 has been added and states that the stabilized ferritic stainless steel in claim 29 includes between 31% and 35% weight percent of chromium. Claims 33-46 have been added and generally correspond to the cancelled claims 5-9, 11-14, 16, 18, 19, 24 and 25 that were presented in the Response to Final Office Action.

The disclosure has been objected to because the solenoid body (22) set forth on page 7, line 17 should instead be a injector body (22). Applicant has

amended the specification to correct this informality and requests that this objection be withdrawn.

The Examiner also objected to the disclosure stating that the word "coil" set forth on page 7, line 16 should be "solenoid." Page 7, line 16 of the disclosure includes three occurrences of the word "coil," therefore Applicant is unclear which occurrence the Examiner is referring to. Further, Applicant reviewed the two sentences that are associated with page 7, line 16 and do not believe that any of the occurrences of the word "coil" should be changed to "solenoid." The bobbin (26) shown in FIG. 1 of the present patent application surrounds the fuel tube (12), and the bobbin (26) supports a coil (28) of a solenoid. *See Specification*, pg. 7, lines 15-16. With continuing reference to FIG. 1, the coil (28) is further surrounded by a coil body (30). *See Specification*, pg. 7, lines 16-17. Applicant therefore requests that this objection be withdrawn.

Claim 26 has been rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. *See Office Action dated July 26, 2006* ("Office Action"), pg. 3. In particular, the Examiner stated that the recitation of "said plurality of components" raises double inclusion issues. This portion of claim 26 has been deleted, and claim 26 has been further amended to particularly point out and distinctly claim the invention set forth therein. Applicant requests that this rejection of claim 26 be withdrawn.

Claim 26 has been rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 6,244,526 to Schuldt et al. ("the Schuldt

reference") in view of U.S. Patent No. 5,601,664 to Kosa et al. ("the Kosa reference") and U.S. Patent No. 4,239,556 to Cline et al. ("the Cline reference"). Applicant respectfully traverses this rejection.

Amended claim 26 is directed to a fuel injector assembly comprising a seat assembly formed of a martensitic steel, an injector body formed of solenoid-quality stabilized ferritic stainless steel, and a solenoid body formed of solenoid-quality stabilized ferritic stainless steel. The injector body and the solenoid body are adjacent and are joined together by welding. The stabilized ferritic stainless steel comprises, in terms of weight percentage, about 10% to about 35% chromium and at least one element selected from the group consisting of titanium and columbium, wherein each of the at least one element is present at no more than about 1.5 weight percent.

Applicant submits that the combination of the Schuldt, Kosa and Cline references do not teach or suggest a fuel injector assembly including a stabilized ferritic stainless steel injector body adjacent and welded together with a stabilized ferritic stainless steel solenoid body as recited in amended claim 26. In rejecting claim 26, the Examiner introduced the Schuldt reference to show a conventional fuel injector assembly including an injector body (18) and a solenoid body (14), both formed of ferritic stainless steel. *See Office Action*, pg. 3. As acknowledged by the Examiner, the Schuldt reference does not disclose that the injector body (18) and a solenoid body (14) are both formed of "stabilized" ferritic stainless steel material. *See id.* To remedy this deficiency, the Examiner combined the Kosa reference with the Schuldt reference to show that the

stabilized ferritic stainless steel material in the Kosa can be used in solenoid valves and fuel injection systems for automobiles. *See Kosa*, Col. 5, lines 5-10; *Office Action*, pgs. 3-4. As such, the Examiner concluded that it would have been obvious to use the stabilized ferritic stainless steel material disclosed in the Kosa reference for forming the parts of the fuel injector in the Schuldt reference. *See Kosa*, Col. 5, lines 5-10; *Office Action*, pgs. 3-4.

While the Kosa reference generally states that stabilized ferritic stainless steel may be used to form components in a solenoid valve or a fuel injection system, it does not specifically suggest forming adjacently positioned fuel injector components (i.e., the injector body and the solenoid body) of stabilized ferritic stainless steel and providing a weld connection therebetween. The Kosa reference does indicate that magnetic cores, end plugs, and housings in a solenoid valve may be formed of stabilized ferritic stainless steel. However, merely listing solenoid components that may be formed of a particular material does not provide any correlation between a first solenoid component formed of stabilized ferritic stainless steel and its relative position to a second solenoid component formed of stabilized ferritic stainless steel. By welding together two adjacent fuel cell assembly components, such as an injector body and a solenoid body, the amount of metallurgical sensitization that occurs between the weld and first and second fuel cell assembly components is reduced.

For at least the foregoing reason, Applicant submits that the combination of the Schuldt, Kosa and Cline references fail to teach or suggest all of the

limitations disclosed in claim 26 and requests that the rejection of this claim be withdrawn.

Dependent claims 27 and 28 include additional limitations that are not disclosed in the combination of the Kosa, Schuldt and Cline references. In particular, new claim 27 depends from claim 26 and states that the stabilized ferritic stainless steel includes between 0.26 and 1.5 weight percent of titanium. The Examiner noted that the Kosa reference discloses a stabilized ferritic stainless steel alloy comprising, in terms of weight percentage, 15-20% chromium, up to 0.51% titanium, and up to 0.34% columbium/niobium. *See Office Action*, pg. 4. Applicant submits that the Kosa reference teaches away from using titanium in an amount up to 0.51% titanium as suggested by the Examiner. It appears the Examiner's support for saying that the Kosa reference discloses titanium up to about 0.51% from an Alloy G is set forth in Table 1. *See Kosa*, Col. 5, lines 37-57. While Alloy G listed in Table 1 in the Kosa reference is shown as including 0.51% titanium, the results of the Erichsen cup testing in Table 3 were noted as inconsistent for Alloy G, and the results of the salt spray testing shown in Table 5 showed large pitting for Alloy G indicating a "relatively more severe attack." *See Kosa*, Col. 5, lines 38-57; Col. 7, lines 2-44; Col. 9, lines 5-25; Col. 10, lines 3-5. Given the discussion of Alloy G in the Kosa reference, Applicant submits that using up to 0.51% titanium in the disclosed alloy is not taught or suggested by the Kosa reference. Instead, the Kosa reference states that not more than about 0.02% titanium is used in the alloy. *See Kosa*, Col. 4, lines 17-18. As such, Applicant submits that the Kosa

reference discloses an alloy including up to 0.02% titanium, not between 0.26 and 1.5 weight percent of titanium as recited in claim 27.

New claim 28 depends from claim 26 and states that the stabilized ferritic stainless steel includes between 1.1 and 1.5 weight percent of columbium. As stated above, the Examiner noted that the Kosa reference discloses a stabilized ferritic stainless steel alloy comprising, in terms of weight percentage, up to 0.34% columbium/niobium. *See Office Action*, pg. 4. Since the alloy in the Kosa reference is only described as including up to 0.34% columbium/niobium, all of the limitations included in claim 28 have not been met. *See Kosa*, Col. 3, lines 14-17. In particular, nothing in the Kosa reference teaches or suggests a solenoid-quality stabilized ferritic stainless steel including between 1.1 and 1.5 weight percent of columbium.

Independent claim 29 is directed to an electric solenoid comprising a plurality of components formed of solenoid-quality stabilized ferritic stainless steel. The stabilized ferritic stainless steel comprises, in terms of weight percentage, 21% to about 35% chromium and at least one element selected from the group consisting of titanium and columbium. Each of the at least one element is present at no more than about 1.5 weight percent.

In the present Office Action, the Examiner utilized the Kosa reference, in combination with the Schuldt and Cline references, to teach the weight percentages of chromium, titanium and niobium. *See Office Action*, pg. 4. In particular, the Examiner stated that the Kosa reference discloses a solenoid-quality stabilized ferritic stainless steel alloy having 15-20% chromium. *See id.*

Since claim 29 states that the weight percentage of chromium is 21% to about 35%, Applicant submits that the Kosa reference, in combination with the Schuldt and Cline references, fails to disclose all of the limitations included in claim 29. As claims 30-32 depend from claim 29, these claims are also not taught by the aforementioned combination of references for at least the same reason set forth with respect to claim 29.

Independent claim 33 is directed to a fuel injector assembly comprising a plurality of components formed of solenoid-quality stabilized ferritic stainless steel. At least two of the plurality of components are adjacent and are joined together by welding. The stabilized ferritic stainless steel comprises, in terms of weight percentage, 21% to about 35% chromium and at least one element selected from the group consisting of titanium and columbium. Each of the at least one element is present at no more than about 1.5 weight percent.

The stabilized ferritic stainless steel set forth in claim 33 comprises 21% to about 35% weight percent chromium. As stated above with respect to claim 29, the Kosa reference discloses a solenoid-quality stabilized ferritic stainless steel alloy having 15-20% chromium. *See Kosa*, Col. 2, lines 48-49. Thus, for at least the same reason set forth with respect to claim 29, Applicant submits that the Kosa reference, in combination with the Schuldt and Cline references, fails to teach all of the limitations included in claim 33. As claims 34-42 depend from claim 33, these claims are also not taught by the aforementioned combination of references for at least the same reason set forth with respect to claim 33.

Independent claim 43 is directed to a fuel injector assembly including an electric solenoid actuator, wherein the assembly comprises a fuel tube formed of an austenitic stainless steel and an injector body formed of a stabilized ferritic stainless steel. The fuel tube and the injector body are joined together by welding. The stabilized ferritic stainless steel comprises, in terms of weight percentage, 21% to about 35% chromium and at least one element selected from the group consisting of titanium and columbium. Each of the at least one element is present at no more than about 1.5 weight percent.

The stabilized ferritic stainless steel set forth in claim 43 comprises 21% to about 35% weight percent chromium. As stated above with respect to claim 29, the Kosa reference discloses a solenoid-quality stabilized ferritic stainless steel alloy having 15-20% chromium. *See Kosa*, Col. 2, lines 48-49. Therefore, for at least the same reason set forth with respect to claim 29, Applicant submits that the Kosa reference, in combination with the Schuldt and Cline references, fails to teach all of the limitations included in claim 43. As claim 44 depends from claim 43, this claim is also not taught by the aforementioned combination of references for at least the same reason set forth with respect to claim 43.

Independent claim 45 is directed to a fuel injector assembly comprising a plurality of components, wherein at least one of the plurality of components is formed of solenoid-quality stabilized ferritic stainless steel. The stabilized ferritic stainless includes, in terms of weight percentage, about 10% to about 35% chromium and between 0.26 and 1.5 weight percent of titanium.

The Examiner noted that the Kosa reference discloses a stabilized ferritic stainless steel alloy comprising, in terms of weight percentage, 15-20% chromium, up to 0.51% titanium, and up to 0.34% columbium/niobium. *See Office Action*, pg. 4. For the same reasons set forth above with respect to claim 27, Applicant submits that the Kosa reference teaches away from using titanium in an amount up to 0.51% titanium as suggested by the Examiner. Instead, the Kosa reference states that not more than about 0.02% titanium is used in the alloy. *See Kosa*, Col. 4, lines 17-18. As such, Applicant submits that the Kosa reference discloses an alloy including up to 0.02% titanium, not between 0.26 and 1.5 weight percent of titanium as recited in claim 45.

Independent claim 46 is directed to a fuel injector assembly comprising a plurality of components, wherein at least one of the plurality of components is formed of solenoid-quality stabilized ferritic stainless steel. The stabilized ferritic stainless includes, in terms of weight percentage, about 10% to about 35% chromium and between 1.1 and 1.5 weight percent of columbium.

As stated above, the Examiner noted that the Kosa reference discloses a stabilized ferritic stainless steel alloy comprising, in terms of weight percentage, up to 0.34% columbium/niobium. *See Office Action*, pg. 4. Since the alloy in the Kosa reference is only described as including up to 0.34% columbium/niobium, all of the limitations included in claim 46 have not been met. *See Kosa*, Col. 3, lines 14-17. In particular, nothing in the Kosa reference teaches or suggests a solenoid-quality stabilized ferritic stainless steel including between 1.1 and 1.5 weight percent of columbium.

Conclusion

In light of the foregoing, Applicant submits that claims 26-46 are in condition for allowance and such allowance is respectfully requested. Should the Examiner feel that any unresolved issues remain in this case, the undersigned may be contacted at the telephone number listed below to arrange for an issue resolving conference.

Applicant does not believe that any fee is due at this time. However, the Commissioner is hereby authorized to charge any fee that may have been overlooked to Deposit Account No. 10-0223.

Respectfully submitted,

Dated: 10/26/06

Dennis B. Danella
Reg. No. 46,653

JAECKLE FLEISCHMANN & MUGEL, LLP
190 Linden Oaks
Rochester, New York 14625-2812
Tel: (585) 899-2930
Fax: (585) 899-2931

Conclusion

In light of the foregoing, Applicant submits that claims 26-46 are in condition for allowance and such allowance is respectfully requested. Should the Examiner feel that any unresolved issues remain in this case, the undersigned may be contacted at the telephone number listed below to arrange for an issue resolving conference.

Applicant does not believe that any fee is due at this time. However, the Commissioner is hereby authorized to charge any fee that may have been overlooked to Deposit Account No. 10-0223.

Respectfully submitted,

Dated: 10/26/06

Dennis B. Danella
Reg. No. 46,653

JAECKLE FLEISCHMANN & MUGEL, LLP
190 Linden Oaks
Rochester, New York 14625-2812
Tel: (585) 899-2930
Fax: (585) 899-2931